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# The 114th ICR Annual Symposium

AUTHOR(S):

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# THE 114TH ICR ANNUAL SYMPOSIUM

(12 December 2014)

## ORAL PRESENTATION

OHNO, Kohji (Chemistry of Polymer Materials)

“Precision Design and Applications of Polymer-brush-afforded Hybrid Particles”

FRISCO-CABANOS, Heidie L. (Chemical Biology)

“Synthetic Molecules That Protect Cells from Anoikis and Their Use in Cell Transplantation”

OGAWA, Hiroki (Polymer Materials Science)

“Structural Analysis of the Polymer Surfaces and Interfaces with SR-GISAXS”

YOSHIDA, Hiroyuki (Molecular Aggregation Analysis)

“A New Experimental Method to Determine the Electron Affinity of Organic Semiconductors and Its Application to Organic Electronics”

— ICR Award for Young Scientists —

KAYAHARA, Eiichi (Polymer Controlled Synthesis)

“Synthesis and Physical Properties of a Ball-like Three-dimensional  $\pi$ -Conjugated Molecule”

— ICR Award for Young Scientists (Foreign Researchers' Category) —

TEX, David Michael (Photonic Elements Science)

“Control of Hot-carrier Relaxation for Realizing Ideal Quantum-dot Intermediate-band Solar Cells”

— ICR Award for Graduate Students —

NAGATA, Koichi (Organoelement Chemistry)

“Syntheses and Structures of Terminal Arylalumylene Complexes”

— ICR Award for Graduate Students —

NISHIMURA, Hidetaka (Structural Organic Chemistry)

“On-top  $\pi$ -stacking of Quasiplanar Molecules in Hole-transporting Materials: Inducing Anisotropic Carrier Mobility in Amorphous Films”

— ICR Award for Graduate Students (Foreign Students' Category) —

MOHAMED, Ahmed Mohmed (Bio-knowledge Engineering)

“NetPathMiner: R/Bioconductor Package for Network Path Mining through Gene Expression”

— ICR Grants for Promoting Integrated Research —

YOSHIMURA, Tomoyuki

“Spectroscopic Detection of Chiral Molecules of Theoretical Existence”

WAKIOKA, Masayuki

“Development of the Synthetic Method for Precise Control of Primary Structures of  $\pi$ -Conjugated Polymers via Direct Arylation Polymerization: Combination of Experimental and Theoretical Approaches”

LE, Quang Phuong

“Investigation of Photocarrier Dynamics in Perovskite-based Solar Cells”

YAMADA, Yasuhiro

“Dielectric Screening Effects on the Optical Properties of Nanomaterials”

SATO, Ryota

“Strategic Synthesis of High-Performance Core-Shell Structured Catalytic Nanoparticles with Low Pt Loading”

TAKEUCHI, Katsuhiko

“Synthesis and Applications of Non-Innocent PNP-Pincer Type Phosphaalkene Ligands”

## POSTER PRESENTATIONS

**LW** : Laboratory Whole Presentation

**LT** : Laboratory Topic

**GE** : General Presentation

### — Organoelement Chemistry —

**LW** “Studies on the Synthesis and Properties of Novel Organic Compounds Containing Heavier Elements”

**GE** HIRANO, Koki; MIYAKE, Hideaki; SASAMORI, Takahiro; TOKITOH, Norihiro  
“Synthesis, Properties, and Structures of Group 6 Metal Carbonyl Complexes Bearing a Triphospha[3]radialene Ligand”

### — Structural Organic Chemistry —

**LW** “Research Activities in Structural Organic Chemistry Laboratory”

**GE** ZHANG, Rui; MURATA, Michihisa; WAKAMIYA, Atsushi; MURATA, Yasujiro  
“Synthesis and X-ray Structure of Open-Cage Thiafullerene C<sub>69</sub>S and Oxafullerene C<sub>69</sub>O Derivatives”

**GE** CHAOLUMEN; ENNO, Hiroki; MURATA, Michihisa; WAKAMIYA, Atsushi; MURATA, Yasujiro  
“Synthesis, Structure, and Properties of Dibenzo[*a,f*]perylene Bis-imide Derivatives”

### — Synthetic Organic Chemistry —

**LW** “Recent Advances of Research in Synthetic Chemistry Laboratory”

**LT** YANAGI, Masanori; TSUDA, Ayumi; UEDA, Yoshihiro; FURUTA, Takumi; KAWABATA, Takeo  
“Counter-anion Induced Accelerative Acylation by Nucleophilic Catalysis”

### — Advanced Inorganic Synthesis —

**LW** “Poster Lab Whole Presentation of Advanced Inorganic Synthesis, Division of Synthetic Chemistry”

**GE** YAMAOKA, Satoshi; SAKAMOTO, Masanori; TERANISHI, Toshiharu  
“Synthesis of Gold Nanoparticles Protected by Novel Bulky Porphyrin Ligand”

**GE** KIMURA, Masato; SAKAMOTO, Masanori; FURUBE, Akihiro; TERANISHI, Toshiharu  
“Synthesis and Optical Properties of Heterostructured Au/ZnS Nanoparticles”

**GE** MATSUMOTO, Kenshi; SATO, Ryota; TRINH, Thang Thuy; SAKUMA, Noritugu; TERANISHI, Toshiharu  
“Grain Size Dependence of Magnetic Properties in L1<sub>0</sub>-FePd/ $\alpha$ -Fe Nanocomposite Magnets”

**GE** EGUCHI, Daichi; SAKAMOTO, Masanori; TERANISHI, Toshiharu  
“Synthesis of Stable Gold Clusters Face-coordinated by Porphyrin Derivatives Containing Disulfide Groups”

### — Chemistry of Polymer Materials —

**LT** HSU, Shu-Yao; ISHIGE, Ryohei; OHNO, Kohji; TSUJII, Yoshinobu  
“Synthesis of Concentrated Polymer Brushes with Extraordinarily Large Thicknesses by Living Radical Polymerization and Characterization of Their Tribological Properties”

**GE** NAKANISHI, Yohei; ISHIGE, Ryohei; SAKAKIBARA, Keita; OHNO, Kohji; TSUJII, Yoshinobu; OGAWA, Hiroki; KANAYA, Toshiji; MORINAGA, Takashi; SATO, Takaya  
“Structural Analysis by Ultra-small-angle X-ray Scattering Method for Membranes of Self-assembled Nanoparticles with Polymer Brushes”

### — Polymer Controlled Synthesis —

**LW** “Research Activity of Polymer Controlled Synthesis Group”

**GE** MAEDA, Yuki; KAYAHARA, Eiichi; YAMAGO, Shigeru  
“Synthetic Study on Cyclic-Conjugated Porphyrin Oligomers”

**GE** FUJII, Akira; YAMAGO, Shigeru  
“Propargyl Tellurides for Living Radical Polymerization”

### — Inorganic Photonics Materials —

**GE** OKUMURA, Shun  
“Structural Analysis of Local Coordination State of Sn<sup>2+</sup> Center in Oxide Glass”

**GE** TOKUNAGA, Yuta  
“Preparation of Proton Conductive Organic-inorganic Hybrid Phosphate Membranes with Proton Conductivity”

**GE** MATSUKI, Hiroaki  
“Protein Adsorption Characteristic of Organic-Inorganic Hybrid Material Containing Gold Nanoparticles”

### — Nanospintronics —

**GE** YOSHIMURA, Yoko; KIM, Kab-Jin; TANIGUCHI, Takuya; UEDA, Kohei; HIRAMATSU, Ryo; MORIYAMA, Takahiro; ONO, Teruo  
“Real-time Observation of Domain Wall Motion in Ferromagnetic Wires”

**GE** KAWAGUCHI, Masashi; MORIYAMA, Takahiro; ONO, Teruo  
“Layer Thickness Dependence of the Current Induced Effective Field”

### — Biofunctional Design-Chemistry —

**LW** “Research Activity at Biofunctional Design Chemistry”

**GE** MURAYAMA, Tomo; PUJALS, Silvia; FUTAKI, Shiroh  
“Curvature Sensitive Membrane Perturbation by Amphipathic Peptides of Adenovirus Protein VI”

### — Chemistry of Molecular Biocatalysts —

**LW** “Research Activities in the Laboratory of Chemistry of Molecular Biocatalysts”

**GE** OZAKI, Ayane; Li, Chunjie; WATANABE, Bunta; HIRATAKE, Jun  
“Irreversible Inhibition and Reactivation of Human  $\gamma$ -Glutamyl Transpeptidase by Mechanism-Based Inhibitors”

### — Molecular Biology —

**LW** “Research Activities in the Laboratory of Molecular Biology”

### — Chemical Biology —

**LW** “Create New World of Bioactive Synthetic Small Molecules”

— **Molecular Materials Chemistry** —

[LW] “Research Activities in Molecular Materials Chemistry Laboratory”

[GE] LEI, Lin; TANISHIMA, Miho; GOTO, Atsushi; KAJI, Hironori  
“Design of Initiators in Organo-catalyzed Living Radical Polymerization”

— **Hydrospheric Environment Analytical Chemistry** —

[LW] “The Determination of Bioactive Trace Metals in Seawater Using an Automated Preconcentration Device”

[LT] MINAMI, Tomoharu; KONAGAYA, Wataru; ZHENG, Linjie; SOHRIN, Yoshiki  
“Vertical Profiles of Dissolved and Total Dissolvable Bioactive Trace Metals along 165°E in Western North Pacific”

— **Solution and Interface Chemistry** —

[GE] TANAKA, Yuki; SHIMOAKA, Takafumi; MORITA, Kohei; SONOYAMA, Masashi; TAKAGI, Toshiyuki; KANAMORI, Toshiyuki; HASEGAWA, Takeshi  
“Surface Chemistry and Spectroscopic Studies on a Chemical Model Accounting for Material Characteristics of Perfluoroalkyl Compounds”

[GE] SHIOYA, Nobutaka; SHIMOAKA, Takafumi; HASEGAWA, Takeshi  
“Infrared Spectroscopic Study of Molecular Orientation of p-type Organic Semiconductor Thin Film”

— **Molecular Microbial Science** —

[LW] “Laboratory of Molecular Microbial Science”

[LT] OGURA, Ryutaro; KAWAMOTO, Jun; KURIHARA, Tatsuo  
“Study on Polyunsaturated Fatty Acid-biosynthesis Enzymes Involved in the Microdomain Formation in Bacterial Membrane”

— **Polymer Materials Science** —

[LW] “Investigation of Polymer Structure for Creation of New Polymer Properties”

[GE] MURAKAMI, Momoko; MATSUURA, Tomohiko; TAKAHASHI, Nobuaki; NISHIDA, Koji; KANAYA, Toshiiji  
“Shear-induced Structure Formation Process of Isotactic Polystyrene above Nominal Melting Temperature”

[GE] KISHIMOTO, Mizuki; INOUE, Rintaro; OGAWA, Hiroki; NISHIDA, Koji; KANAYA, Toshiiji  
“Effect of Interactions between Polymer Thin Film and Substrate on the Glass Transition Temperature”

— **Molecular Rheology** —

[LW] “Research Activities in Molecular Rheology Laboratory”

— **Molecular Aggregation Analysis** —

[LT] YAMADA, Kazuto; YOSHIDA, Hiroyuki; TSUTSUMI, Jun'ya; SATO, Naoki  
“Electronic States of Organic Semiconductor Thin Films: Impact of Polarization Energy, Band-dispersion and Molecular Orientation”

[GE] SHINTAKU, Naoto; MURDEY, Richard; YOSHIDA, Hiroyuki; SATO, Naoki  
“The Energy Gap of a Radical Molecular Thin Film and the Energy Level Alignment at the Interface with Conductive Substrates”

— **Interdisciplinary Chemistry for Innovation** —

[LW] “Research Activities of Interdisciplinary Chemistry for Innovation”

— **Particle Beam Science** —

[LW] “Status of Accelerator Laboratory, Advanced Research Center for Beam Science”

[LT] KITAHARA, Ryunosuke; IWASHITA, Yoshihisa; NOP Group  
“A Report of the Neutron Life Time Measurement at J-PARC/BL05”

— **Laser Matter Interaction Science** —

[GE] MIYASAKA, Yasuhiro; HASHIDA, Masaki; NISHII, Takaya; INOUE, Shunsuke; SAKABE, Shuji  
“Physics of Nano Ablation for Metals by Femtosecond Laser Irradiation”

[GE] MAEDA, Kazuya; INOUE, Shunsuke; TOKITA, Shigeki; HASHIDA, Masaki; SAKABE, Shuji  
“Improvement of Contrast with Plasma Mirror Installed in T<sup>6</sup> Laser System”

[GE] NISHII, Takaya; HASHIDA, Masaki; MIYASAKA, Yasuhiro; INOUE, Shunsuke; SAKABE, Shuji  
“Formation of Laser Induced Periodic Surface Structures on Metal”

[GE] NAKASHIMA, Yuto; INOUE, Shunsuke; TERAMOTO, Kensuke; NAKAMIYA, Yoshihide; MIYASAKA, Yasuhiro; HASHIDA, Masaki; SAKABE, Shuji  
“Generation and Acceleration of Proton Beams by Interaction of Thin Foils and Laser Pulses”

[GE] TERAMOTO, Kensuke; INOUE, Shunsuke; NAKASHIMA, Yuto; WATANABE, Kota; NAKAMIYA, Yoshihide; TOKITA, Shigeki; HASHIDA, Masaki; SAKABE, Shuji  
“Generation, Acceleration and Guidance of Electrons by Intense Laser Irradiation”

[GE] MORI, Kazuaki; HASHIDA, Masaki; NAGASHIMA, Takeshi; INOUE, Shunsuke; HANGYO, Masanori; SAKABE, Shuji  
“THz Wave Generation from Cluster Plasma Produced by Intense Laser”

— **Electron Microscopy and Crystal Chemistry** —

[LW] “Research Activities in Division of Electron Microscopy and Crystal Chemistry”

[GE] FUJIYOSHI, Yoshifumi; NEMOTO, Takashi; KURATA, Hiroki  
“EELS Mapping of Localized Surface Plasmon and Its Analysis”

— **Structural Molecular Biology** —

[LW] “Introduction of Structural Molecular Biology Laboratory”

— **Organic Main Group Chemistry** —

[LW] “Research of Organic Main Group Chemistry”

[GE] NISHIKORI, Tatsushi; NAKAGAWA, Naohisa; IWAMOTO, Takahiro; HATAKEYAMA, Takuji; TAKAYA, Hikaru; NAKAMURA, Masaharu  
“Anti-Selective Iron-Catalyzed Carbosilylation of Alkynes”

[GE] ISHIBASHI, Kosuke; ISOZAKI, Katsuhiro; TAGUCHI, Tomoya; TAKAYA, Hikaru; NAKAMURA, Masaharu; MIKI, Kazushi  
“Reaction Rate-Acceleration of Hydrosilane Alcoholysis with Self-Assembled Monolayer-Capped Gold Nanoparticles”

— **Advanced Solid State Chemistry** —

[LW] “Introduction of Advanced Solid State Chemistry Laboratory”

[GE] SEKI, Hayato; SAITO, Takashi; SHIMAKAWA, Yuichi  
“Crystal Structure and Physical Properties of Novel Perovskites  
 $\text{SrFe}_{1-x}\text{Ni}_x\text{O}_3$ ”

— **Organotransition Metal Chemistry** —

[LW] “Activity Report: Organotransition Metal Chemistry Laboratory”

[GE] IIZUKA, Eisuke; WAKIOKA, Masayuki; OZAWA, Fumiyuki  
“Synthesis of D-A Type  $\pi$ -Conjugated Polymer with Dithienosilole  
Units via Direct Arylation Polymerization”

[GE] CHANG, Yung-Hung; TAKEUCHI, Katsuhiko; OZAWA, Fumiyuki  
“Hydrosilylation of  $\text{CO}_2$  Catalyzed by PNP-Pincer Type Phos-  
phaalkene Complexes of Iridium and Its Applications”

— **Photonic Elements Science** —

[LW] “Recent Research Topics of Photonic Elements Science Group”

— **Chemical Life Science** —

[LW] “Research Topics in Laboratory of Chemical Life Science”

[LT] MIHARA, Tomoko; GOTO, Susumu; OGATA, Hiroyuki  
“A Study of Amino Acid Biosynthetic Enzymes Encoded in Viral  
Genomes”

— **Mathematical Bioinformatics** —

[LW] “Enumeration of Tree-like Chemical Compounds with Benzene  
Rings and EnumMol Server”

— **Bio-knowledge Engineering** —

[GE] KARASUYAMA, Masayuki; MAMITSUKA, Hiroshi  
“Sparse Multiple Graph Integration for Label Propagation”

— **Nano-Interface Photonics** —

[LW] “Research Topics in Nano-interface Photonics Group”

— **Research Center for Low Temperature and Materials  
Sciences** —

[LT] TERASHIMA, Takahito  
“Artificial Superlattices of Heavy Fermion Antiferromagnets”